The Veterinary Record

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 48. NOVEMBER 29, 1941. VOL. 53.

The Oestroscope: An Instrument for Detecting Oestrus in Cows

By

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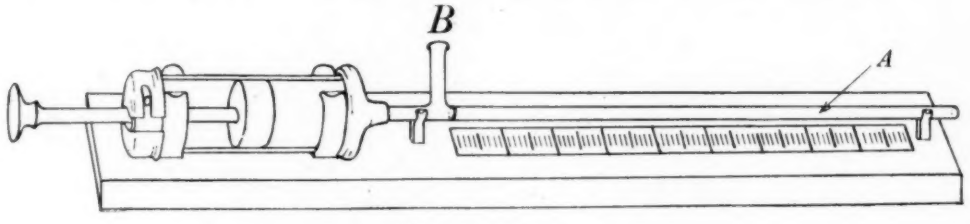
It is well known (see Hammond, 1927) that in winter, oestrus in the cow is usually of shorter duration than in summer and therefore, especially when it occurs at night, more likely to be missed and valuable time consequently wasted in getting cows in calf. Moreover, the external signs of oestrus tend to be less obvious in winter than in summer and cases are not unknown in which even skilled herdsmen are misled and fail to put cows to the bull. An objective method of diagnosis of oestrus, comparable with the vaginal smear method in the rat, would obviously be of value in many doubtful cases, and though efforts have been made to find such a test none had succeeded hitherto (see Cole, 1930, Ferring, 1937). In view of the importance of getting cows into calf without delay during the coming winter, we feel that a short description of a simple method for diagnosing oestrus, which has recently been described by us (Scott Blair *et al.*, 1941), may be of interest.

The test depends on the measurement of a physical (rheological) property of the cervical mucus known as flow-elasticity, a property which, as we have shown, varies regularly during the oestrous cycle, attaining a sharp maximum round about the time of heat. A simple and inexpensive instrument (the Oestroscope) has been designed for the measurement of the flow elasticity (ρ) of samples of bovine cervical mucus, by means of which the measurement can be made in the cow-shed in the course of a few minutes. The Oestroscope in the original form, as designed for use in the laboratory, is shown in the figure. In the simplified form suitable for field use the Oestroscope consists essentially of a glass capillary tube of about 2 mm. bore and about 11 cm. long, graduated in millimetres. One end is cemented into a metal shank which will fit on to the nozzle of any "Record" hypodermic syringe. Between the shank and the 10 cm. mark there is an open side-tube B.

The test is carried out as follows. A sample of mucus, taken by hand with the usual precautions from the upper vagina, is roughly homogenised by squeezing between two glass plates. A straight-bladed knife (a small palette knife or metal spatula serves excellently) can be conveniently used for manipulating the blob of mucus. The Oestroscope is fitted on to a suitable syringe (2 ml. or 5 ml. capacity are most convenient) and with the side tube closed by the thumb, mucus drawn into the capillary until the meniscus reaches the 10 cm. mark. Keeping the side tube closed and the apparatus horizontal, the column of mucus is then slowly forced out of the capillary until the meniscus reaches the 7 cm. mark. At this point the thumb is quickly removed from the side tube, thus suddenly releasing the pressure on the column of mucus, the flow-elasticity of which causes the meniscus to recoil along the capillary. The amount of recoil in millimetres is noted. After use, the apparatus can be readily cleaned by washing in warm water.

Such measurements were carried out by us on 41 samples from cows in, or very near, heat and on 143 from cows in mid-cycle. Mean values of ρ in mm. were $14{\cdot}7 \pm 9{\cdot}6$ for the first group and $2{\cdot}4 \pm 1{\cdot}4$ for the second group. Our results led us to the conclusion that samples for which ρ is greater than 5 mm. are from cows which are very probably in or very near, oestrus. If the ρ-value is high but the cow concerned will not take the bull, it should be possible to decide whether she is approaching, or alternatively going off, heat by making a second test a few hours later, since the curves given in the above-mentioned paper indicate that in the first event ρ will then have increased. If, on the other hand, the cow is going off heat, ρ will probably have decreased when the second measurement is made.

As an example of the way in which the Oestroscope may be of practical use in animal breeding, it may be mentioned that during our investigation there were two occasions upon which cows gave samples showing high (*i.e.*, "oestrous") ρ-values, though in the opinion of the herdsman they were not in season.



THE OESTROSCOPE

The cows were put to the bull in order to test the oestroscopic diagnosis and stood to service in each case. The test would also be of use in cases where it is particularly desirable to get a valuable cow in calf without delay and where there is reason to believe that previous oestrous periods have been missed either because the external signs were weak or because oestrus occurred at night. Periodic measurements would give warning of the approach of oestrus since ρ begins to rise some time before heat occurs, and the herdsman could be instructed to keep a careful watch on the animal and if necessary to inspect her at intervals throughout the night.

We are indebted to the Agricultural Research Council for a research grant made to one of us (F. H. M.) and to the Editors of *The Biochemical Journal* for permission to reproduce the figure. The Oestroscope can be obtained from Messrs. Arnold and Sons.

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POULTRY INDUSTRY EXPANSION IN CANADA

Reuter's agency furnishes the following comment on our recent reference to the great expansion, and thorough overhaul from the point of view of disease reduction and the application of hygienic measures, which the poultry industry of Canada is undergoing to enable it to take full advantage of the clamant British demand:—

"'Complete mobilisation for active service of Canada's more than 45,000,000 hens is the aim of an Agriculture Department campaign to increase egg production and meet growing overseas and domestic demands. 'Wanted —Two more eggs per month from every hen in 1942,' is the keynote of the campaign. A series of educational pamphlets headed 'Eggs for Britain' have been circularised to farmers; they contain hints to farmers about egg production, and draw attention to the large part which farmers can play in the war effort by an increased supply of eggs."

Not only the immediate, but the post-war effect upon our home poultry industry of this Canadian campaign is doubtless one of the concerns of the N.F.U. which has led to the proposal to reorganise the Poultry Section, both at Headquarters and in the county branches. Measures are being drafted which, says *The Farmer and Stockbreeder*, aim at ending the widespread criticism that the Union has not adequately catered for the special interests of poultry-keepers.

* * * * *

The Ministry of Food, in co-operation with the Ministry of War Transport, has prepared a scheme to assist farmers who experience difficulty in arranging transport to take fat stock from their farms to collecting centres, and also to facilitate the better organisation of such transport and thus secure important economies in the national effort. The new scheme will operate for stock entered for presentation on and after November 17th. Farmers will still be at liberty to make their own arrangements.

Salt Poisoning in Pigs

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The purpose of these experiments was not to test the toxicity of salt for pigs but to produce a simple enteritis. The literature gives the impression that pigs are extremely sensitive to salt, the main effect being an enteritis. Paratyphoid or necrotic enteritis is under investigation at this laboratory and information on the effect of enteritis on young susceptible pigs and adult "carriers" was required. "Carrier" animals are likely to excrete *Salmonella suipestifer* in greatly increased numbers when suffering from diarrhoea, and for this reason excessive salt feeding might be a factor in initiating outbreaks of necrotic enteritis.

As will be seen, no toxic effects were, in fact, produced even by large doses of salt and this lack of toxicity seems worthy of record because there is still a widespread belief that pigs are extremely sensitive to salt.

Two experiments are concerned. In the first, salt was fed in increasing amount in the food and, as it was found impossible to induce pigs to consume any great amount of salt, large doses were given by the mouth with a dosing syringe in the second experiment.

Experiment I

This was carried out with two pens each of two pigs, 14-16 weeks old, in good condition and feeding well. They were fed on a ration of three parts weatings, four parts barley meal, two parts flaked maize and one part fish meal. The fish meal was guaranteed to contain not more than 2·5 per cent. of sodium chloride, and on analysis was found to contain 1·8 per cent. Sufficient common salt was added to two different lots of the ration to give final concentrations of 0·5 per cent. and 1·0 per cent. respectively. The 0·5 per cent. was fed to one pen and the 1·0 per cent. to the other. The amount of food consumed was not weighed but it was to appetite and about 3 lb. per head per day. For two days the meal was fed as thin gruel, and then the amount of water was reduced to make a pasty mass resembling porridge. After six days the concentrations of salt were raised to 2·5 per cent. and 5·0 per cent. The pigs continued to feed well. One pig on the 5·0 per cent. salt ration had diarrhoea for a few days but was otherwise normal. Six days later the salt concentrations were raised to 10·0 per cent. and 20·0 per cent. The pigs consumed the first feed of these concentrations but refused the next. They nosed about in the feed but ate very little. As a result of the fall in food consumption they lost condition but showed no other symptoms. A week after the first feeding of the highest concentrations, one pig from each pen was slaughtered for *post-mortem* examination. No macroscopic lesions were found in any organ. The remaining pigs were put on the ordinary ration without added salt and recovered condition rapidly.

Experiment II

Four littermate Wessex Saddleback pigs which had been bred at the laboratory were recently made available

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from another experiment. These animals had, immediately after weaning, been exposed to infection with *S. suipestifer*, and later they had been employed in swine fever experiments. They were six months old at the time of dosing, and although they weighed only 147 to 165 lb. (66·7 to 74·9 kg.) they were in good condition and eating well. In each case, pure sodium chloride in water, partly in solution and partly as a suspension, was administered by means of a dosing syringe. Water was withheld for some hours after dosing.

The first animal (I) was dosed with 3 oz. (85 g.) of salt in 4 oz. (*c.* 114 ml.) of water, about one-and-a-half hours after its morning feed. No symptoms whatever were noted, and on the following day a similar dose was administered after a fast of 17 hours; again symptoms were absent, but the blood chlorine (estimated by a modification of the method described by J. C. Whitehorn, 1921, *J. biol. Chem.*, **45**, 449-460) rose from 298 mg. per 100 ml. before dosing to 340 mg. per 100 ml. three hours afterwards. A second animal (II) was given 6 oz. (190 g.) of salt in 8 oz. (*c.* 227 ml.) of water after a similar fast, and again symptoms were not shown. Great difficulty was experienced in dosing and bleeding this animal, so that it was not included in the final experiment, in which 8 oz. (227 g.) of salt in 15 oz. (*c.* 200 ml.) of water was administered to each pig. One animal (IV) vomited some hours after receiving this dose, but otherwise no clinical symptoms were shown, all eating well and passing faeces of normal consistency over the period of ten days during which they were subsequently maintained under observation. Determinations of the blood chlorine values were made in each case, the results being incorporated in the following table.

Blood chlorine values before and after dosing with 8 *oz.* (227 *g.*) *pure sodium chloride.*
(*In mg. per* 100 *ml.*).

Pig.	Weight.	Initial.	Hours after dosing. 3 hrs.	24 hrs.	48 hrs.
I (No. 851)	155 lb. (70·3 kg.)	286	336	334	302
III (No. 850)	165 lb. (74·9 kg.)	294	350	338	308
IV (No. 853)	160 lb. (72·6 kg.)	306	376	366	304

(The weight of pig II was 147 lb., or 66·7 kg.)

Summary

(1) Salt was fed in increasing concentrations to four pigs until the point was reached at which the pigs would no longer consume the food. No ill effects, apart from slight diarrhoea in one pig, were produced.

(2) The administration of single doses of up to 8 oz. (227 g.) of pure sodium chloride, in rather less than twice its volume of water, produced vomiting in one case, but no other clinical symptoms whatever, in pigs averaging 160 lbs. (72·6 kg.) in weight. The blood chlorine values were raised by about 20 per cent.

The Food Ministry has given a warning that under air-raid conditions it should be taken as a general principle that if milk has been contaminated by poison gas then in view of the many practical difficulties involved in its successful recovery it will have to be destroyed.

ANNOTATION

Salt Poisoning in Pigs

Poisoning by salt or brine has long been incriminated as a source of losses in pigs, and there are many published records of its occurrence. In his well-known text-book, Lander (1926) states that: "It is generally accepted that large doses of sodium chloride, or common salt, may lead to poisoning, and it is stated that from 4·5 to 7 lbs. may prove poisonous to cattle; from 2 to 4·5 lbs. to the horse; and from 4 to 8 ozs. to the sheep and pig.

"A pig had five daily doses of 1 oz., six of 2 ozs., and six of 3 ozs. of salt consecutively, mixed with its food. Although the 3-oz. doses were not eaten readily, no abnormal effects were observed (Lander).

"It is only, however, in respect of the pig that salt poisoning assumes importance, and in our literature there are numerous references to poisoning of that animal by this agent."

Writing in Wooldridge's "Encyclopaedia," the same author (1934) states: "The question of poisoning by common salt is complicated by its confusion with brine poisoning, which is probably due to bacterial toxin action. This opinion finds support from the circumstance that the toxicity of herring brine decreases on keeping while the concentration of salt increases."

Of Lander's five references to salt poisoning in pigs, four are taken from the *Veterinarian* between the years 1856 and 1862: a study of the original papers makes it difficult for one to avoid the conclusion that, from the practical viewpoint, as much (or as little) was known of the subject then as is at the present day. In 1856, the *Veterinarian* drew attention to the problem, and published an extract of a note on an outbreak which had occurred amongst 13 six-to-eight-months-old pigs at Augsberg. About 15 quarts of brine, in the form of residue from the salting of meat from other pigs, is stated to have been added to the tub in which their food—they were being fattened with "the residue from a brewery mixed with water"—was mixed. All went off their food the next day, and six showed alarming nervous symptoms, including convulsions, followed by collapse. These six animals were slaughtered and autopsied, the constant findings being dry mucous membranes and "peculiarities in the blood," said to include a dirty white and shining serum. Their meat was safely consumed. Lepper, of Aylesbury, wrote in the same year to the effect that he had been familiar with brine poisoning in pigs throughout his 40 years' association with practice, and stated also that he had not infrequently witnessed great losses from over-doses of salts in solution. Further, he mentions a case in which 11 pigs had died and 14 or 15 others had become seriously ill through receiving large doses of salt in the food. Lewis (1856), of Monmouth, reported an interesting case of brine poisoning. Two lots of pigs in separate compartments—a sow and eleven piglets in one and four large pigs in another—had been fed on a Monday morning with food (young turnips, bran, pea and bean pods) prepared the previous day in a clean iron boiler "in which had been cooked the family dinner on the Sunday." One of the large pigs was found to have vomited, another to be reeling about the sty, and shortly afterwards the sow and six piglets were found

dead, the remaining piglets being seriously ill. A *post-mortem* examination of one piglet revealed an intense inflammatory condition of the gastric mucosa, with patches of erosion. The small intestines were devoid of food material. Stomachs were forwarded for analysis to a Wm. Herepath, of Bristol, who reported: "The pigs you brought me portions of have died from an excess of common salt given to them. Every pint measure of the fluid taken from the stomach of the large animal contains 42 grains of salt, and, as proof, I send you that extracted from 2 ozs. There is no other substance present that can be detected; certainly no metal or mineral agent. I think it is very likely that a servant may have thrown brine into the pigs' food, not thinking it injurious. The mucous surface of the larger stomach, in the dependent portion, was covered with inflammatory specks, as if grains of an irritant had lain on it." Lewis was able to ascertain that a 3 to 4 lb. piece of twice-salted beef had, in fact, been boiled in the water in the tub, but he was evidently most sceptical of Herepath's diagnosis. In a strongly-worded letter to the editor of the *Veterinarian* he pointed out that, if the stomach of the larger pig mentioned had contained eight quarts, the quantity of common salt held in solution would have been something under 1½ ozs.—a remarkably small quantity to account for death. An editorial comment was to the effect that it was highly probable that common salt had been responsible, although "there might be something in the conjecture of German veterinary surgeons, that there is also present in the brine a fatty acid, engendered by heat. So many instances of unexpected death from this substance have come under our notice, that we are compelled to believe it to be poisonous under certain circumstances, strange and inexplicable as it may seem to be." In the same year, Corby, of Andover, and Tombs, of Stratford-on-Avon, published short clinical communications on brine poisoning, but the latter's suggestion was that the incriminated brine had become impregnated with lead! Robinson (1859), of Tamworth, ascribed the death of three pigs and the appearance of "spasm and pain" in a fourth to the salting of the unsound potatoes in the diet, and although his analyst, Professor Alfred Taylor, of Guy's, was unable to demonstrate the presence of excessive quantities of salt, the report suggested familiarity with salt poisoning in pigs, and mentioned that common salt, in large quantity, was an irritant, and in at least two cases had destroyed human life. Gregory (1859), of Tunbridge, expressed his familiarity with the condition, and Pyatt (1862), of Nottingham, records an outbreak in 26 pigs, nearly half of which died. The symptoms described in this paper are worthy of note, since they seem to be those generally agreed to be typical of salt poisoning in this species. There was loss of appetite, thirst, dullness, some flatulence, diarrhoea, vertigo and convulsive movement, epilepsy in all cases, champing of the jaws, shaking of the head, a pink hue to the mucosa of the mouth, pupillary dilatation, and, in some cases, total blindness. In fatal cases, there was eventual inability to stand through posterior paralysis, and death occurred in from eight to 24 hours after the onset of symptoms. *Post-mortem* examination revealed a generalised enteritis. Professor Tuson agreed with Pyatt's findings, and was unable to find anything other than salt to account for the death of these animals. A stone-and-a-half of salt was being mixed with the food of these animals, from which Pyatt calculated that the average daily intake was about 4½ ozs. per pig. Unfortunately, this case is somewhat marred, as are others, by the possibility of some toxic factor's being present in the rest of the food. In Pyatt's own words: "I found they had been fed upon wheat-flour which was made from the rakings of the farm, boiled potatoes that were diseased, and fusty bran; which I certainly thought at the time was rather peculiar diet." Again, it is possible, though perhaps not likely, that dietary deficiencies may have been responsible for many of the symptoms ascribed in the various early papers to "salt poisoning": the attempt to incriminate a toxic factor is still very much in evidence at the present day, at any rate in the case of otherwise unexplained deaths of certain domestic species! Similar nervous symptoms to those recorded by Pyatt are described by Lamoureux (1890); in this case, a very salty soup, made from pickled lard, was held to be responsible.

A rather more satisfactory communication is that of Pokhvalenskii (1927), who recorded a case of poisoning with kitchen salt in three pigs, each weighing about 4 pood (a pood = 36·113 lbs. or 16·38 kg., Webster). These animals died after eating about 4 lbs. of flour sweepings bought at the grocer's, and a goose fed with this flour died also. Chemical analysis of the sweepings showed a sodium chloride content of 32 per cent., calcium salts 2·5 per cent., insoluble residue 4 per cent., and magnesium salts and sulphates of alkali metals 3·5 per cent. A biological test was made with a rabbit, weighing 2·7 kg., which was fed 36 g. of the flour sweepings, *i.e.*, 13 g. per kg. liveweight, or the same proportion as that consumed by the pigs: the rabbit died within 24 hours. A further test was made with another rabbit, weighing 2·85 g., which was fed with 38 g. of a mixture prepared from good flour with 32 per cent. of pure sodium chloride added: this rabbit also died within 24 hours with similar symptoms to those shown by the first rabbit. Salei (1940) states that he observed sodium chloride poisoning in 70 pigs, the weights of which ranged from 70 to 80 kg. These animals sickened after eating a composite fodder, which was fed alone as from April 7th. On the 7th and 8th they did not eat the food put before them, but on the 9th they ate, and all 70 animals showed the same symptoms, *viz.*, excitement, salivation, pupillary dilatation; some of them rushed to water, stumbling over anything in their way, while the rest stood still with hanging or partly-raised head. *Post-mortem* examination of slaughtered animals showed haemorrhagic gastro-enteritis with the main lesions in the stomach. Analysis of the fodder revealed no toxic substances, but there was 6 per cent. sodium chloride present, constituting a dose of 180 g. per day, or 2·25 g. per kg. liveweight. [I have to thank Dr. E. E. Martin, of the staff of the Imperial Bureau of Animal Health, for her kindness in translating these papers from the original Russian.] Moine (1935) recorded violent nervous symptoms and, in some cases, death, in 50 kg. pigs to the diet of which salt had been suddenly added; the computed average dose was about 120 g. Edwards (1918) recorded an outbreak of salt poisoning in pigs and poultry, and was able to follow up the case by producing the condition experimentally in fowls and pigeons. His observations upon the percentages of

sodium chloride present in the crop contents of birds which had been killed by known doses are of great interest and may, as he himself points out, have an important bearing on the condition in pigs.

Despite the many clinical communications alleging that salt is toxic to the pig, it has always seemed to be a matter of great difficulty to induce poisoning by pure sodium chloride in this species. Lander's negative result is referred to above. Tocher (1935) carried out some interesting experiments in which a total of 30 pigs, all approximately three months old and in good condition, was used. The animals were divided into five groups, each of six. The first group received a basal ration consisting of sharps, wheat, maize, extracted soya bean meal, ground limestone, cod liver oil and separated milk, and served as controls. The other four groups received the basic ration, and in addition varying quantities of salt, *viz.*, 0·25, 0·50, 1 and 3 oz. per head per day respectively. The group which was to receive the largest doses was provided with gradually increasing amounts so that the ultimate level was attained after some weeks. The experiment was continued for 90 days, at the end of which time no toxic effects had been noted. Tocher also offered a dry ration containing 11 per cent. of salt to a pig weighing 61 lb., but the ration was refused completely, even after being moistened with 4 lb. of water. Another ration containing 4½ per cent. of salt was then offered, but was only half-eaten after the animal had starved for three days. An ordinary ration, free from added salt, was eaten with evident relish on the following day. From these experiments, Tocher suggested that pigs can be induced to consume fairly high proportions of salt if gradually added to the ration, but that they will not eat a ration containing the same proportion of salt if the change is from "no salt to a salty diet." Sinclair (1939) successfully fattened pigs on a diet containing 3 per cent. of salt; his results are incorporated in the accompanying table (*see p. 698*).

Marcq and Devuyst (1935), according to the abstract quoted below, suggested that the tolerance of pigs for salt would appear to be individual, and found that "cases of experimental poisoning were difficult to obtain except where secondary disorders were present. One animal was able to ingest 100 g. per day for seven days without appreciable effect on the blood chlorine, although excessive ingestion of salt usually caused an increase in the blood chlorine." Wautié (1935) fed two animals, each of 35 kg., on gradually increasing doses of sodium chloride as follows: 50 g. each per day for 5 days; 75 g. for 5 days; 100 g. for 12 days; 200 g. for 8 days; 250 g. for 3 days. Not all of the ration was consumed on the first of the three days on which the 250 g. level was included, but it appears that over 3,000 g., *i.e.*, over 100 oz., of salt was consumed by each pig during the 33-day period! At the end of this time there was a violent thirst, the faeces were liquid, and there was a polyuria. Wautié states that the salt was in part mixed with the meal and in part dissolved in water with the potatoes which formed part of the diet; in this form, he claims, it was readily accepted. The same author (1939) records the administration by stomach tube of 100 g. of salt, dissolved in a litre of water, to a pig weighing 45 kg. The dosing was carried out just prior to feeding time. The animal developed an immediate and violent thirst, consuming 10 litres of water within four hours. Otherwise appetite was impaired, respirations were accelerated and there was polyuria and diarrhoea, but no vomiting. Recovery was rapid. A second animal vomited part of a dose of 150 g. of salt in 1,500 ml., administered after feeding: in this case also, there was a violent thirst, but again recovery was rapid. The communication appearing elsewhere in this issue (Slavin and Worden, 1941), while making limited observations, provides further evidence of the difficulty which attends attempts to induce poisoning with pure sodium chloride, at any rate in single doses or over short periods of time.

There have been numerous suggestions that factors other than sodium chloride may be responsible for the toxic effects of brine. In addition to those mentioned above, *viz.*, bacterial toxins, a "fatty acid" and lead, the possible presence of "ptomaines" or of traces of harmful inorganic substances other than sodium chloride has been discussed. Nevertheless, evidence of sodium chloride poisoning has been brought forward in the case of many other species, notably in the fowl and other birds, in ruminants, and even in seals. It is not proposed to review these cases, or to attempt to discuss the vast literature which has arisen about salt metabolism in man and laboratory animals. The following papers are, however, of special interest. Behrens (1924), investigating the toxicity of sodium chloride for mice, found that the concentration of the solution in which the salt was given was a most important factor: a quantity which was non-fatal when administered as an approximately 14 per cent. solution was fatal when given in half the quantity of water. Velu (1928) recorded the drinking without apparent harm of saline waters by animals in Morocco. Steyn (1931) was unable to induce poisoning in Merino sheep at Onderstepoort by feeding them for up to six months on a common salt free diet and then offering them salt *ad libitum*.

Despite the very unsatisfactory published evidence for the occurrence of poisoning by sodium chloride in the pig, it would appear to be considered by many present-day veterinarians as a not uncommon condition. In the discussion which followed the recent paper of Claxton (1940), McCleery stated that he had twice definitely met with the condition, and Claxton, in his reply, indicated an obvious familiarity with such cases. Although Anthony (1940) does not record any original observations, he states that "many cases of swill poisoning are undoubtedly due to some of the sodium chloride, sulphate, potash, etc., which may be contained in the swill."

The question therefore remains an open one, although there would seem to be little experimental evidence to indicate that in normal circumstances a healthy pig would voluntarily consume sufficient of the salt to cause serious symptoms or death. Indeed, as the accompanying table shows, animals have withstood individual doses equivalent to 3·1 g. per kg. bodyweight (about 5½ oz. per 100 lb.) without ill effect, and continuous daily consumption of 85 g. or 3 oz. has failed to produce symptoms. The purpose of this annotation, as of the short paper to be found elsewhere in this issue, is to focus attention on the problem and to show the need for more detailed observations, clinical as well as experimental. It is suggested that practitioners and others who are able to record what would appear to be authentic cases of

EXPERIMENTAL ATTEMPTS TO INDUCE SALT POISONING IN PIGS

(a) *By incorporation of Sodium Chloride in the food*

Subject (age and weight)	Dose of NaCl	Results	Author
Unstated	Up to 85 g. per day for six consecutive days	"No abnormal effects were observed"	Lander (1926)
26 kg.	Rations containing 11 per cent. and 4·5 per cent. NaCl respectively	Ration containing 11 per cent. refused; that containing 4·5 per cent. incompletely consumed	Tocher (1935)
Three months old and weighing about 26 kg. at the commencement	Doses of up to 85 g. per head per day for long periods	No toxic effects	Tocher (1935)
Data taken from abstract	—	"Cases of experimental poisoning difficult to obtain except where secondary disorders were present. One animal was able to ingest 100 g. per day without appreciable effect on the blood chlorine"	Marcq and Devuyst (1935)
35 kg. at commencement ...	Consecutive doses of :— 50 g. for 5 days; 75 g. for 5 days; 100 g. for 12 days; 200 g. for 8 days; 250 g. for 3 days	250 g. dose not at first accepted. Violent thirst, liquid faeces and polyuria at end of 33-day period	Wautié (1935)
21 pigs maintained on ration throughout the fattening period	3 per cent. sodium chloride in ration; average daily food consumption was 5·29 lb. (2·4 kg.)	Mean daily gain of 1·287 lb. (0·584 kg.)—not significantly different from that of control groups not receiving added salt. Marked increase in water consumption and urination, but no significant effect upon moisture retention by muscles, dressing percentage or on size and macroscopic appearance of kidneys	Sinclair (1939)
4 healthy animals, 14-16 weeks of age	Increasing percentages in ration: 0·5, 2·5 and 10 per cent. in two cases; 1·0, 5·0 and 10·0 per cent. in others	Up to 5 per cent. consumed without ill-effect, apart from diarrhœa in one pig. The 10 and 20 per cent. diets refused after first feed, but no toxic effects.	Slavin and Worden (1941)
(b) *By dosing with sodium chloride*			
45 kg.	100 g. in 1 litre of water; *i.e.*, 2·22 g. per kg. bodyweight	Immediate violent thirst, polyuria and diarrhoea, but no vomiting; recovery rapid	Wautié (1939)
Similar to above, but exact weight not given	150 g. in 1·5 litres of water	Approximately one-third of dose vomited. Violent thirst. Recovery rapid	Wautié (1939)
Average of 72·5 kg.	227 g. in 450 ml. of water; *i.e.*, 3·13 g. per kg. bodyweight	Vomiting in one instance; no other symptoms whatever. Blood chlorine levels rose by about 20 per cent.	Slavin and Worden (1941)

salt poisoning should not hesitate to do so, and that they should bear in mind the following points: (1) whether or not the animals were in a fasting condition prior to consuming the toxic dose; (2) whether or not the food was fed wet, or water was freely provided; (3) the age and management of the affected animals; and (4) the full composition of the diet.

ADDENDUM

There are many references in the literature to salt poisoning in poultry, and some workers have described

the experimental production of the condition in the fowl and other birds. The following records, from the Veterinary Laboratory of the Ministry of Agriculture and Fisheries, Weybridge, Surrey, suggest, however, that the occurrence of salt poisoning in poultry, as well as in pigs, has been over-stressed. From July, 1933, to December, 1940, the Poultry Diagnosis Department has carried out *post-mortem* examinations on nearly 40,000 birds. During that time no cases of salt poisoning have been encountered, and no *post-mortem* lesions have been found which have given any reason to suspect the condition. Again, none of the histories has suggested salt poisoning. In all outbreaks of any magnitude, full bacteriological examinations and biological transmission experiments have been carried out. If the cause has remained obscure, visits have been paid by Veterinary Investigation Officers or by members of the Ministry's staff; salt poisoning has never been incriminated.

I am indebted to Mr. R. F. Gordon for the above information, and to Dr. W. Horner Andrews for his permission to publish it in this article.

ALASTAIR N. WORDEN.

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*From I.B.A.H. reprint collection.

CLINICAL COMMUNICATION

Sodium Chloride Poisoning in Fowls

T. J. RICHARDSON, M.R.C.V.S.

BECKENHAM, KENT

Subject.—63 R.I.R. fowls of various ages.

History and Clinical Examination.—Advice was sought on October 8th, when it was found that ten deaths had occurred since the morning of the previous day.

On examination of the flock about a dozen were picked out and isolated as being obviously ill. The degree of illness varied from the exhibition of slight malaise and sleepiness—capable of movement on being roused—to that of definite muscular weakness bordering on prostration. The most obvious symptom shown by those which could move about was excessive thirst.

Post-mortem Examination.—Three dead birds were made the subject of *post-mortem* examination on the spot.

No. 1. Seven-months-old pullet: Impaction of the crop (the usual semi-sour crop smell was absent.) The proventriculus was empty and the lining membrane had the appearance of salt bacon fat—glistening and white. The gizzard contents were normal. The intestinal tract from the duodenum to the cloaca showed a catarrhal condition with a tenacious exudate. The liver was very dark in colour.

No. 2. Three-months-old pullet: Impaction of the crop. The proventriculus and gizzard appeared normal. The duodenum was slightly inflamed, as was also the posterior part of the large intestine. The liver was dark.

No. 3. Year-old-cockerel: Proventriculus catarrhal. Patchy catarrhal inflammation of the intestinal tract. Liver dark.

Questioning the owner elucidated the following further history. On October 6th 3 lb. (three pounds) of common salt was made into a strong solution and used for preserving certain garden produce. On the removal of the garden produce the salt solution was placed in the boiler along with the household waste, greens, etc., and boiled for an hour and a half, thus losing a certain amount of water by evaporation. A

portion of this swill was offered to the one and only pig, which refused to have anything to do with it. The remainder of the swill was used along with meal to make a mash which was fed on the evening of October 6th to all the fowls, old and young alike. The greedy feeders, of course, received a higher percentage of the sodium chloride impregnated food than the others.

Treatment.—The whole flock was ordered abundance of fresh water and in addition the isolated birds were given barley water. The crops of the badly affected birds were washed out, and it was suggested that if any of these were not on their feet by the following morning they might be destroyed. It was subsequently learned that two were destroyed and no further losses took place.

Discussion.—The constant and obvious symptoms were (*a*) excessive thirst; (*b*) enlargement of the crop.

The constant *post-mortem* findings were: (*a*) darkened liver; (*b*) impaction of the crop; (*c*) varying degrees of inflammation throughout the alimentary tract.

In certain individual cases a progressive muscular weakness was observed, the birds showing difficulty in walking with final collapse almost simulating paralysis. The birds, however, remained conscious and on stimulation could move their legs, although apparently unable to sustain their weight.

Whether a reduction of the death rate could have been expected had active measures such as washing out crops been taken, in the case of the badly affected birds, on October 7th instead of the 8th, will not be known.

Conclusion.—"Waste not and want not" may be a good maxim in war-time, but "salt not and save" would appear to be a better one where fowls are concerned.

ABSTRACTS

[A BACTERIOLOGICAL EXAMINATION OF BOVINE TONSILS AND VAGINAS. Francis, J. (1941.) *Vet. J.* **97**. 243-251.]

Recent work suggests that the udder may not be the only reservoir of *Streptococcus agalactiae*. Evidence is also available to indicate that cases of mastitis due to *Corynebacterium pyogenes* may arise from an endogenous focus within the body rather than from without, by infection up the teat duct. It is clearly of interest, therefore, to know whether either of these organisms can be found in bovine tonsils. Francis has studied the bacterial flora of the tonsils of 100 cattle, the material comprising 92 heads condemned by meat inspectors, and the heads of five other adult cattle and three calves. He has also carried out a bacteriological examination of vaginal swabs from 40 dairy cows.

Tonsils.—The predominant organisms were Gram-negative coliform rods and α-haemolytic streptococci. Many of the 87 strains of streptococci could not be identified, but *Str. agalactiae* and *Str. bovis* were not present. Group 2 mastitis streptococci were isolated from five animals, group 3 streptococci from seven and streptococci belonging to Lancefield's group C from nine animals. Eight additional strains of group 3 mastitis streptococci which differed in some ways from typical members of this group were also encountered. *C. pyogenes* were found in 18 cattle, staphylococci in four, a haemolytic coccobacillus in six and a haemolytic diphtheroid in seven animals.

Vagina.—Mastitis streptococci of groups 2 and 3 were each isolated once. *C. pyogenes* was found on one occasion, and *Str. acidominimus* 15 times. *Str. agalactiae* was not isolated from any of the swabs.

These findings give no support to the view that the tonsil or vagina serves as a reservoir for *Str. agalactiae*, although these sites may harbour mastitis streptococci of groups 2 and 3. The tonsil may well be an important site from which *C. pyogenes* may invade the blood stream and be carried to other parts of the body.

E. G. W.

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[SWEAT-GLANDS OF THE DOG. Speed, J. G. (1941.) *Vet. J.* **97**. 252-256.]

Although there exists a popular belief that dogs have no sweat-glands, it is well known to many that dogs sweat freely from the foot-pads and muzzle. In a thesis published in German in 1923, Otto Hirt dealt in detail with the character and distribution of sweat glands in the dog and showed that they are most numerous in the skin of the back. The glands open into hair follicles and their frequency in different situations varies with the breed.

Speed has studied the structure and distribution of sweat-glands in dogs of various breeds—Airedale, Cairn, collie, greyhound and fox-terrier. Glands are well developed on the lips, back, thorax, shoulders and thighs. The sweat-glands of the pads are easily seen owing to the absence of hairs. They are coiled glands, whereas sweat-glands in the other situations are sinuous but simple. It was found that the sweat glands open into the hair follicles by a separate duct, situated nearer the mouth of the follicle than that of the sebaceous gland. Hirt, on the other hand, stated that the two glands have a common opening.

No sweat glands were found on the hairless part of the muzzle, the scrotum or the perineal region.

E. G. W.

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[VACCINE DOSAGE IN CANINE DISTEMPER. Whitney, L. F. (1941.) *Vet. Med.* **36**. 420-423.]

The author states that in order solidly to immunise dogs with vaccine alone, the vaccine must be fresh and that it is necessary to grade the dose according to the size of the dog.* Whilst 5 to 10 c.c. is suitable for puppies up to 15 lb. in weight, a dose at least double in quantity is suggested for the larger breeds. However, even small doses of vaccine are worth while as a protective measure especially if the vaccine is fresh.

J. S. P.

* A large single dose is just as efficient as two or more smaller vaccinating doses.

Weekly Wisdom

Wild life, in all its variety of plant and animal and scenery, is a thing to be safeguarded, if only as part of the setting in which the most remarkable of living things —man—has his being. Every generation holds these things in trust. If a great picture or building is destroyed man may make another, not indeed identical, yet as great. But if an animal or plant is exterminated, or a noble scene wiped out, something irreplaceable has been lost.—"The Times."

REPORT

[NORTHERN RHODESIA. Report of the Veterinary Department for year 1940.]

This comprises a review by the Director of Veterinary Services, Mr. J. P. A. Morris, M.R.C.V.S., of the several activities of the Department, and an Appendix by the Veterinary Research Officer on Laboratory operations. As the responsible authority, the Department deals with all official aspects of the livestock industry—disease control, animal husbandry, marketing, legislation and research, and this report is divided accordingly into sections dealing with each of these functions.

The state of the industry was satisfactory on the whole, during the year, although it was seriously threatened at one time by the spread of rinderpest from Tanganyika in the north. Happily this danger was overcome by a concerted large-scale immunisation campaign carried out by veterinary personnel from various interested Governments in south-eastern Africa, including that of Northern Rhodesia. Hundreds of thousands of animals were successfully vaccinated against the disease to form an immune belt. To quote the report: "This is evidently the largest inoculation campaign ever attempted in the world and proves what can be achieved when sufficient funds and staff are available." The vaccine used was formol-glycerine spleen virus, but experiments were under way at the time of reporting to determine the most suitable manner of converting the temporary immunity created by this vaccine into a more permanent one. These experiments were in the capable hands of Mr. D. T. Mitchell, O.B.E., M.R.C.V.S.

Of some 20 infectious animal diseases in the colony, trypanosomiasis, contagious bovine pleuro-pneumonia, heartwater, helminthiasis, anthrax and blackquarter appear to have been prevalent and serious. All diseases were dealt with by the most effective up-to-date means available. Of interest in this respect were the highly satisfactory results obtained with potassium antimony tartrate in the treatment of trypanosomiasis (species of trypanosomes concerned are not stated). A course of seven injections of the drug proved efficacious in most cases. Vaccination against pleuro-pneumonia was also satisfactory—Kabete vaccine being used. For heartwater short-interval dipping was adopted. Vaccinations on a large scale were carried out against anthrax and blackquarter. No mention is made of measures taken against helminthiasis, but the research officer records some interesting observations on the havoc caused by this complaint as well as some important findings at autopsies on game. Other major diseases occurring in the colony are contagious abortion which is widespread, horse sickness which is successfully prevented by vaccination, rabies, anaplasmosis and piroplasmosis.

In the husbandry section it is stated that European stock owners have brought about some improvement in their methods, but native owners were for the most part apathetic, despite the continued educational efforts of the Department. The following quotations from this section of the report are worthy of particular note: "Many farmers have volunteered for military service and a few are serving with the Forces. The remainder have intimated their willingness to join up or continue farming, whichever is considered by the Government to serve the war effort best. In those cases where farmers have already gone on service, their wives, with the help of neighbours, are carrying on. The whole of the staff of the Veterinary Department, eligible for war service, have volunteered and two veterinary officers and six livestock officers have already been released and are serving with the Forces."

The work of the Research Station was interrupted considerably by the absence of the research officer on rinderpest duties. Consequently, the Appendix contributed by him is of the nature of a review of prevailing problems to be faced, rather than a record of work accomplished.

W. K.

ROYAL COLLEGE OF VETERINARY SURGEONS

Animal Management Examination, November, 1941

List of Successful Candidates

(*Continued from page* 687)

READING:

Bowen, J. W.
Braham, R. W. J.
Broad, R. C.
Brown, P. L.
Epps, Miss E. M.
Fitzpatrick, R. J.
George, I. G.
Gilbert, G. H. (credit)
Holford, Geoffrey
Keene, D. P.
Narayan, P. H.
Perrett, D. R. (credit)
Plowright, Walter
Rowe, J. F. W. (credit)
Salmon, W. M. (credit)
Sambrook, P. M. F.
Smith, E. K.
Wellington, John
Wilson, J. P.

LIVERPOOL:

Chambers, J. R.
Hawkins, R. H.
Jones, F. C.
Nixon, R. I.
Wynne, I. M.

MILK RECORDING

"Milk recording (not necessarily through an official milk recording society) is being advocated very strongly as an aid to dairy farming in war-time," states *The Home Farmer* (the official journal of the Milk Marketing Board) in its November issue, and continues: "The known performance of every cow in the herd is an invaluable aid to production at a time when every pint of milk counts, when rations cannot be afforded to wasters and when pasturage is precious.

"Milk recording, especially when it is unofficial, is not the tedious business many farmers suppose it to be. It is, of course, another encroachment on man or woman power, but there are such obvious financial advantages from maintaining the milk supply without wasters in the herd that recording is a sound commercial proposition. The farmer who claims to 'know' his bad doers without records has had his 'intuition' upset time after time. And in any case, he cannot put his finger on the leakages of feeding-stuffs and build up a herd that is *small* enough to give big yields.

"To maintain the milk supply—and it must be maintained if dairy farmers are to uphold their reputation—every cow must pull her weight. 'Fancy' yields are harmful to war-time herd management; low yields mean a dangerous gap in the food defence. Recording alone can take war-time efficiency to the cowshed."

IN PARLIAMENT

"ADDRESS" DEBATE ON AGRICULTURE

When the debate on the Address was resumed in the House of Commons on November 19th, Mr. D. O. Evans raised the question of agriculture and said that the Minister of Agriculture was responsible for organising the production of a variety of foods for the population to the value of something over £250,000,000 a year. Those were the sinews of war just as much as the products of the munition works. The decision of the Agricultural Wages Board to increase agricultural wages to £3 a week would be generally welcomed in the House. (Cheers.) This was a red-letter day for farm workers. The Minister should be prepared to implement the undertaking to adjust price levels to costs of production. There was already a scarcity of labour, and in December 10,000 more skilled men were liable to be called up. Those men could not be taken away without affecting production. It would be a great boon to farmers if the forms which they had to fill up were reduced in number and simplified. We wanted farms, not forms. (Hear, hear.) Was the Minister satisfied that the policy of ploughing up more and more land was the right one? The time had come when the Government should indicate broadly what was their long-term policy.

Sir I. Fraser said that every industry must make its sacrifice to the armed Forces. But, from the point of view of feeding the nation, it might well be said that the man who could grow a ton of food was doing as vital work as the seaman who could bring a ton of food into the country. The House ought to fortify the power of the argument of the Minister of Agriculture in dealing with the Minister of Labour by enabling him to point out the absolute necessity for leaving skilled men on the land to guide and direct the unskilled soldiers and women who came in to make up the numbers and to help. Everyone welcomed the decision to raise the minimum agricultural wage to £3, but it was supremely important that the Minister should, as soon as possible, assure farmers that the increase in wages would be taken into account when fixing prices for next year. He pleaded with the House to alter, to some extent, its attitude towards the farmer. The Government should set up a Royal Commission to consider post-war agricultural problems.

Mr. T. Smith said that more attention should be paid to rural education and rural amenities.

Colonel Troyte hoped that the Minister would say that the prices of farmers' produce were to go up so that farmers could pay good wages to the agricultural workers.

Mr. Quibell urged that some of the prosperity now returning to agriculture should be used for the repair and reconditioning of farm buildings.

Mr. R. D. Scott said he believed that the majority of farmers did not like subsidies and would prefer to have an economic price for the produce. But at present a subsidy was a question of expediency.

Minister's Reply

Mr. R. S. Hudson, Minister of Agriculture, said that the output of cereals and straw this year would be at least half as much again as in peace-time. The total area in crops resulting from the ploughing-up policy was about 45 per cent. above peace-time level. The yield from the ploughed-up land was extremely satisfactory.

So far as fodder crops were concerned the situation had materially improved since the last information was given. Despite the difficulties of the war, the farmers had actually managed to maintain to all intents and purposes the 1938 level of milk production. Milk produced in 1938, the last year of peace, was 1,076,000,000 gallons. This year it was 1,053 000,000, but the liquid milk consumed had gone up by 200,000,000 gallons. That was a remarkable and striking contribution towards keeping the people healthy and enabling them to stand up to the rigours of the blitz. It was especially valuable, because priority was given to people who needed it most.

He believed it was essential that the War Agricultural Committees or something like them should continue for some years after the war. Meantime, he had told his Committees that they would be safe in making plans for the harvest of 1945. That meant that they had a four years' run. The farmer could see sufficiently far ahead to enable him to work on a proper crop rotation. He did not think they could contemplate any substantial increase of arable land, having regard to prospective supplies of labour and machinery. We should have to try to concentrate from now on on consolidating the gains. Having regard to the position into which agriculture had got before the war, it was true there was still a great deal of land that was badly farmed.

The new survey would include a map of every farm. When the war was over they would have to have sufficient labour and building materials earmarked to provide the cottages required to rehouse the rural population and also put buildings in order. One of the most important steps that could be taken to raise the standards of the agricultural worker would be when he was in a position to pay the ordinary economic rent for his cottage.

The New Minimum

He heartily welcomed the decision of the Central Agricultural Wages Board to raise farm workers' wages to £3 a week. There would be the problem of adjusting agricultural returns to take account of the increased costs; it would not be easy but he thought they would succeed. They had got to drive home to the townspeople that the agricultural labourer could not have a reasonable living wage unless they were willing to pay a reasonable price for the food he helped to produce and unless they were willing to put the farmer in a position to pay such wages and to maintain the land in a good state. The cost of the wages increase might be between £15,000,000 and £20,000,000 sterling. That extra money would have to be paid by the consumers or the Exchequer. It would be paid, directly or indirectly, by every individual in the country.

Many workers in the town areas at one time raised the cry, "Cheap food," and that kept agricultural wages depressed. It meant sweated labour and sweated land. If they looked forward after the war to a revival of the international exchange of goods they must see that the primary consuming countries were prosperous and must be willing to pay a decent price for the food they sent us. Owing to neglect and other causes we started this war with 2,000,000 acres less under cultivation than was the case in the last war. If we were going to prevent that, we had got to pay agricultural labour a decent wage and enable efficient farmers to pay it and keep the land in good condition. The land was one of our most precious heritages. We owed it to our children and their children to cultivate it and keep it in good heart and hand it on not impoverished but unimpaired and able to grow food for the generations yet unborn. (Cheers.)

. . . . . .

Dealing, in the course of the speech summarised above, with the subject of fundamental research, the Minister said: "On the side of fundamental research, we have extended the functions of the Agricultural Research Council and placed further funds at their disposal. But I am so impressed with the fact that our major problem is not getting more knowledge, but getting it more widely distributed that I have appointed an Agricultural Improvement Council to secure more rapid incorporation of modern scientific knowledge into ordinary farming practice. Again, I look forward to great results. We are obtaining from day to day much new knowledge of our fundamental problems and difficulties. Our major problem is to adapt each of the different varieties of farming systems to national war needs in the

light of modern scientific knowledge and the use of modern agricultural implements. There is a Council for England and Wales and a similar one in Scotland set up by my right hon. Friend the Secretary of State for Scotland, and they are both hard at work. I am sure the result of their work will be to increase the knowledge of the farming community and to harness science more closely to the service of the practical farmer."

Colonial Policy

At a later session, on the resumed debate on the Address, Mr. Noel Baker raised the issues of Colonial policy. He said that the war brought a sharp break in the advances made in Colonial administration. It would be to the general advantage to set up a Parliamentary Colonial Committee now.

We had to prove to the Colonial peoples that we meant business when we talked about freedom. The principle of political freedom in various forms was at stake in many of the Colonies. It was easy for Governors and their officials, acting in perfect good faith, to set aside evidence on various matters to which it would be right that the personal attention of the Minister should be devoted. In all the Colonies we should be watching for chances to press forward the training of the people in the conduct of their own affairs. We should not allow indirect rule to become a cloak for oppression. It should, as far as possible, be democratised. Representative government inevitably led to the demand for responsible government and for it within a measurable future.

The suggested amalgamation of Northern and Southern Rhodesia and Nyasaland would mean that nearly 2,500,000 Africans would be governed by 60,000 whites. The two territories were not really contiguous. There was considerable opposition to the amalgamation. The present position on the matter was not clear and it was to be hoped that the Government would state that no decision would be taken until the House had had a full opportunity of debating the matter. It was not a purely Rhodesian question; it was also a British question in which we had certain responsibilities; and the eyes of the world were upon us. He did not believe that the House of Commons would ever again hand over what was called self-government to a small European minority in a territory with a much greater native population. With the West Indian precedent before them, they would not do it again, whatever safeguards were proposed. Any attempt to force the amalgamation during the crisis of the war would create lasting resentment in the House and in the country and would make its rejection doubly sure.

Mr. Noel Baker said that on the economic side there were grounds for congratulating the Government.

Mr. De Rothschild referred to the fact that white men and black were now fighting together acknowledging a single devotion: this unity of black and white should do much to break down the colour bar. The main object of the Colonial Development Act was to raise the standard of living in the Colonies. He was glad to see that this policy was to be pursued in spite of and during the war.

Dr. Morgan said that instead of a waiting policy more speed was required in dealing with Colonial problems. Private monopoly in the Colonies should be throttled. There was too much officialdom of the "old school tie" type in the government of the Colonies. The Colonial Office must not be afraid of democracy.

Colonel Ponsonby suggested that the Colonial Secretary should consider the unification of Colonial territories. A non-party Committee for dealing with Colonial matters would be of great value.

Mr. Creech Jones said that if the Secretary of State would assert the full equality in Africa of the black man with the white man, and would say that nothing else should guide our steps in days to come he would enlist the moral support of the world.

Sir R. Ross did not think it was time for changes in the Constitution anywhere. We must win the war first, and then indulge in them.

Government Reply

Mr. G. H. Hall, Under-Secretary for the Colonies, said that the effect of the war had been to awaken an intense and universal uprush of loyalty to the Throne and support for our cause in all the peoples of the Colonial Empire. Having dealt with this feature in terms of man power and specified employment in military and civil spheres under the Crown, Mr. Hall observed that he attached considerable importance to encouraging officers of the Colonial Office to proceed oversea and examine problems on the spot. Even during the war it had been found possible to send officials of the Colonial Office abroad quite frequently. Lord Hailey was presiding over an Office committee on post-war problems. The committee were engaged in drawing up a list of the problems which were likely to arise in relation to the Colonies at the end of the war, and in assembling the facts, so far as they were known at present, which would have to be taken into account. The investigations of the committee ranged over every field.

The appointing of a commissioner and advisers was not an attempt in any way to side-track expenditure under the Welfare and Development Act. A large number of schemes amounting to some hundreds of thousands of pounds had been sent in to the Colonial Office and approved. The appointment was being considered of an economic and financial adviser working with Sir Frank Stockdale.

The Colonial Office had equipped itself to do much more extensive work for the welfare of colonial people of all races in the United Kingdom. A Welfare Officer was appointed during the year and an Assistant Welfare Officer, who was an African; also an Adviser to colonial students, who was a West Indian, was being appointed.

At the beginning of the war we were rapidly approaching a critical period of colonial history, and the war, while it had in one sense delayed the crisis, had in another sense hastened it. We had reached a point at which the public conscience of this country had been awakened to the need to take a far greater and more constructive interest in the social, economic, and spiritual welfare of the colonial peoples who were now solidly behind us in our war effort. Our duty now was to improve the lot of all the colonial peoples, to help them, and guide them to prosperity, to develop their resources so as to raise their standard of living: and to enable them to take an ever-increasing responsibility in ordering their own affairs.

. . . . . .

The following are among the questions and answers recently recorded in the House of Commons:—

Cattle, Tuberculin-Test

Mr. Culverwell asked the Minister of Agriculture whether cattle tuberculin-tested by veterinary surgeons authorised by his Ministry and found to be tuberculous, are permitted to be sold as dairy cattle?

Mr. Hudson: Yes, Sir. The sale of cows reacting to the tuberculin test is not, on that account, restricted, since as my hon. Friend is aware, reaction to the test does not in itself imply infection in the milk of a reactor.

. . . . . .

Hill Sheep Farming, Scotland (Committee)

Captain McEwen asked the Secretary of State for Scotland whether, apart from any immediate assistance that may be given to the hill sheep farmers, he proposes to institute a comprehensive inquiry into the present position and further prospects of this branch of agriculture in Scotland?

Mr. Johnston: Yes, Sir. After consultation with the former Secretaries of State on the Scottish Council on Post-War Problems he has appointed a committee to inquire into the problem of the hill sheep farming industry in Scotland. The terms of reference of the committee are:—

To investigate the present position of hill and upland sheep farming in Scotland, and to report what steps should in their opinion be taken with a view to placing this branch of the Scottish farming industry on an economic basis, and in particular to specify measures for improving the condition of hill and upland grazings, the health and hardiness of sheep stocks, system of stocking and management, and marketing methods.

The committee is constituted as follows:—

Lord Balfour of Burleigh (Chairman), Mr. William Adair, Major Sir Robert Brooke, Mr. John H. Cranston, Mr. William Gallacher (of the Scottish Co-operative Wholesale Society), Mr. Maitland Mackie, Professor T. J. Mackie, Mr. Alexander Maitland, the Master of Polwarth, and Mr. T. G. Wilson.

[This inquiry (says *The Times*) will be apart from any immediate assistance that may be given to the hill sheep farmers. The subsidy at present being paid in respect of hill sheep is regarded by farmers as inadequate and a further statement by the Government on this subject is expected.

A similar committee is to be set up by the Minister of Agriculture to inquire into the special problems of hill sheep farmers in England and Wales, and there will be collaboration between the two committees.]

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Livestock Inspectors (Duties)

Mr. Snadden asked the Parliamentary Secretary to the Ministry of Food what are the powers of Government inspectors at collecting centres; and whether an inspector is empowered to overturn decisions taken by expert graders operating at these centres?

Major Lloyd George: The duties of livestock inspectors appointed by the Ministry of Food are to inspect the grading of livestock presented for sale to the Ministry at the different collecting centres throughout the country, to advise the graders and to ensure that they are carrying out their duties in a fair and efficient manner. The inspectors have no power to over-rule decisions taken by the graders, except that, under the terms of the Livestock Sales Order, 1940, they are empowered under certain conditions to require that the killing-out percentage of any beast or the dressed carcase weight of any calf, sheep or lamb shall be determined by reference to the actual dressed carcase weight of the animal as ascertained after slaughter.

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Cattle Grading, Northern Ireland

Dr. Little asked the Parliamentary Secretary to the Ministry of Food whether, as the grading of cattle in Northern Ireland continues to give great dissatisfaction and is the cause of much complaint, he will take up the whole question of grading afresh, and appoint umpires at cattle-grading stations to settle cases in dispute between sellers and graders as to quality and price?

Major Lloyd George: I am not aware that the grading of cattle in Northern Ireland is giving dissatisfaction. The question of providing for appeals against the decisions of the graders was closely considered some time ago but was found to be impracticable.

Dr. Little: Will the Minister have inquiries instituted at once to find out how deeply this grievance is felt by the farmers and cattle rearers of Northern Ireland?

Major Lloyd George: We are in close contact with the body representing the farmers of Northern Ireland. We meet them frequently, and I have heard of no complaint for some considerable time.

Dr. Little: Will the Minister meet the farmers, as I do, and find out for himself?

Major Lloyd George: Perhaps my hon. Friend will ask the farmers to let me know their grievances, at the same time as they let him know.

Feeding-stuffs

Mr. Liddall asked the Parliamentary Secretary to the Ministry of Food whether he is aware of the large number of cattle in the country that are being insufficiently fed; and will he at once take steps to have quantities of linseed cake and other animal feeding-stuffs, at present stored in unsuitable and vulnerable premises, distributed to the farmers whose cattle so urgently need the food?

Major Lloyd George: The answer to the first part of my hon. Friend's Question is in the negative. I cannot accept the statement that feeding-stuffs are being stored in unsuitable premises. In order to maintain the supply of cake to farmers throughout the winter, a reserve has been accumulated and it would not be in the national interests to dispose of these supplies as my hon. Friend suggests.

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Poultry (Feeding-stuffs)

Mr. G. Macdonald asked the Minister of Agriculture whether any instructions have been issued as to the quality of feeding-stuffs to be supplied to persons keeping less than 50 head of poultry; and whether there is any differentiation for the owners of less than 12 head of poultry?

Mr. Hudson: No instructions have been issued regarding the quality of feeding-stuffs supplied to persons rationed on the basis of 13 to 50 head of poultry, who are entitled to purchase the same kinds of rationed feeding-stuffs as are persons rationed on the basis of larger numbers of poultry. Domestic poultry keepers with 12 or fewer birds are only entitled to purchase poultry balancer meal, the manufacture of which is controlled by licence of my right hon. and noble Friend the Minister of Food. The formula for balancer meal was agreed by experts of my Department as suitable for feeding with kitchen and garden waste.

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Food Supplies: Horseflesh

Mr. Leslie asked the Minister of Health whether any provision is made to see that horseflesh is fit for human consumption before it is allowed to be sold in the shops?

Miss Horsbrugh: Under the Food and Drugs Act, 1938, the business of slaughtering animals, including horses, for human consumption, requires a licence granted by the local authority. Further, it is an offence not only to sell, but to have in possession for sale, or to consign to any person for that purpose, any food, including horseflesh, intended for but unfit for human consumption. Officers of local authorities have full powers to inspect such food and if necessary seize it with a view to condemnation.

Mr. Keeling asked the Parliamentary Secretary to the Ministry of Food whether a maximum price for all horseflesh can now be fixed?

Mr. Evelyn Walkden asked the Parliamentary Secretary to the Minister of Food whether he has received information from local food control committees of the large increase in applications for licences to trade in horseflesh for human consumption; whether he proposes to authorise or restrict the number of such licences; and can he state the reason for the delay in issuing a horseflesh, retail sales, maximum price order?

Major Lloyd George: The answer to the first part of the Question of my hon. Friend the Member for Doncaster (Mr. E. Walkden) is in the negative. As regards the second part of the Question, food control committees issue licences for new businesses only where it is established that these are necessary in the public interest. As regards the last part of the Question, the delay has been caused by the difficulties in ascertaining the date for the formulation of the proposals, information on which is not readily obtained. A Maximum

Prices Order for horseflesh for human consumption will, however, be made at a very early date.

Mr. E. Walkden asked the Parliamentary Secretary to the Ministry of Food whether he is aware that good working cart-horses are now being purchased at horse repository sales and cattle markets by persons who trade in horseflesh, and that owing to the excessive sums being paid, farmers are unable to acquire such horses for agricultural work; and whether it is the approved policy of the Government to encourage or permit the slaughter of these valuable animals?

Major Lloyd George: I am aware that high prices have been paid in the past for horses for slaughter for human consumption. The maximum prices for horseflesh for human consumption which will shortly be imposed by the Order, should render it unremunerative to sell for this purpose horses which are capable of further useful work.

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Colonial Development and Welfare (Advisory Committee)

Mr. Creech Jones asked the Under-Secretary of State for the Colonies whether steps are being taken to set up the Colonial Development and Welfare Advisory Committee contemplated by the 1940 Act and White Paper 6175; and why has an official committee, under Lord Dufferin, been appointed to examine and press on with the schemes submitted under the Act?

Mr. George Hall: No, Sir. The time is still not considered opportune for the appointment of advisory committees of the kind contemplated when the proposals for the policy of Colonial Development and Welfare were formulated. The reasons for this view, which I explained to the House in a speech on June 11th, 1940, still hold good at the present time. My Noble Friend has, however, decided that, as a matter of Departmental machinery, arrangements for dealing with proposals for expenditure from the Colonial Development and Welfare Vote would be facilitated by the appointment of a small Office Committee, and he invited Lord Dufferin, who, as Parliamentary Under-Secretary of State at the time when the policy was formulated, is especially well qualified for this purpose, to preside over the Committee. I am very glad to say that Lord Dufferin has agreed to do this.

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Medical Profession (National Register)

Mr. Groves asked the Minister of Health what efforts, apart from an announcement in the British Medical Journal, the Central Medical War Committee has made to maintain the National Register of the Medical Profession up to date; and why have not other medical organisations and journals been approached to assist?

Mr. E. Brown: I am informed that the Central Medical War Committee obtains information for the maintenance of the register from the local medical war committees, hospitals and various other sources, and that it avails itself of the assistance of such other medical organisations and channels of communication as seem most likely to be effective.

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Pigeons

Mr. Bellenger asked the Secretary of State for War whether he is satisfied that those officers who have been appointed to the various commands in connection with the care of pigeons required for war purposes, are fully qualified for this service; and whether he is aware that there is considerable dissatisfaction among many of those who have loaned pigeons for this service at the manner in which birds have been injured and lost because of inexpert handling?

Captain Margesson: The answer to the first part of the Question is "Yes, Sir." As regards the second part, if my hon. Friend has any particular case in mind, I shall be glad to look into it.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Dec. 3rd.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 2.30 p.m.

Dec. 6th.—First General Meeting of the Society of Women Veterinary Surgeons, at 36, Gordon Square, W.C.1, 1.30 p.m.

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A.R.P. (Animals) Service

We would again remind those of our readers who are concerned that, as announced in a recent issue of this journal, arrangements have now been made with the Ministry of Home Security for the issue of Certificates of Occupation to members of the profession who are assisting the A.R.P. (Animals) Service, in order to facilitate their passage in controlled areas.

The form is a certificate of occupation issued under the authority of the Ministry of Home Security through the N.V.M.A. Members of the profession who desire such a certificate should make a request—giving their National Registration Identity Number and intimating whether they are engaged in general practice on their own account or, if employed by others, in what capacity—and forward it to 36, Gordon Square, W.C.1, marking the envelope "A.R.P."

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An Important New Research Corporation

Our readers will note from the advertisement on page ix that five of the big British companies engaged in the production of chemicals and of biological products of therapeutic value have agreed to form jointly a new company for the special purpose of facilitating their research into such products and to further the collaboration between those companies and the relative professional or technical organisations concerned with their application.

It is to be hoped that the new Therapeutic Research Corporation of Great Britain, Ltd., the formation of which is claimed to constitute the most important step yet taken in the rationalisation of the British Fine Chemical Industry, will assist in developing a greater degree of co-operation between firms whose products are of veterinary importance and the profession.

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OBITUARY

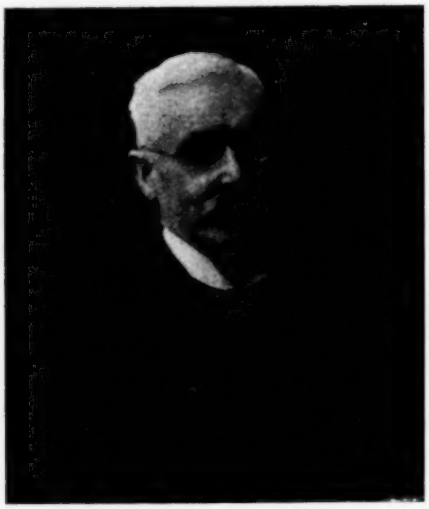
The late Mr. Tom Cooper Fletcher, M.R.C.V.S.

As briefly recorded in our issue of last week, with much regret, one of the best-known figures in veterinary and farming circles over a wide area, Mr. Tom Cooper Fletcher, of Sheffield, died on November 11th, aged 82 years. He was at business until only a few days previously.

A correspondent writes: "Mr. Fletcher was the son of a veterinary surgeon, Mr. Thomas Fletcher, and one of his four brothers, Mr. Walter Fletcher, also entered the profession, another becoming a doctor. In his younger days he was an enthusiastic rider of a 'penny-farthing' bicycle, while he was of an inventive turn of mind and introduced the 'Fletcher dog catcher,' which was of much service when rabies was a disease of moment in this country; he also invented a balling-gun for horses and a pill-giver for small animals.

"Mr. Fletcher was a prominent figure in agricultural circles and was always on the committees of agricultural and dog shows. His practice was mainly

among farmers and he was particularly skilled in the diagnosis and treatment of the ailments of cattle. He had been veterinary surgeon and secretary to the Sheffield Cow-keepers' and Dairymen's Association since its formation 49 years ago. He was a prominent member of the committee of the Sheffield May Horse Parade and for the last 30 years had been veterinary surgeon to the Sheffield Branch of the N.F.U.



"Mr. Fletcher was born in Lincolnshire and attended the Lincoln Cathedral School before going to Sheffield with his father, who was partner in the firm of Fletcher and Nelson, of Ellin Street. He was very well liked by everyone and was always pleased to help the younger generation. In practice until a few days before his death, he maintained a keen interest in veterinary work to the end and was ever ready to learn anything new. He will be sadly missed by his fellow members of the North Midland Division of the N.V.M.A., of which society he was a loyal and popular member."

The funeral took place at Ecclesall, Sheffield, at 11 o'clock on the 15th inst. and many members of the North Midland Division of the N.V.M.A. were present to pay tribute to his memory. Among the family mourners was Mr. S. E. Sampson, M.R.C.V.S., brother-in-law.

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Mr. Leslie Lavers

We learn with deep regret of the death of Mr. Leslie Lavers, only son of Mr. and Mrs. F. W. Lavers, of Purley, who passed away on Sunday last, after an illness of nearly nine months' duration, bravely borne. Mr. Leslie Lavers had been carefully trained by his father, the Managing Director, in the technical and managerial side of the business of Messrs. H. R. Grubb, Ltd., printers of *The Veterinary Record*, and before ill-health overtook him had shown great promise in his work, which included duties in connection with the production of this journal. His loss at the early age of 25 years, following upon that of Mr. Stanley Grubb, one of the directors, a short while ago, is deeply to be deplored. To the bereaved parents we extend our sincere sympathy.

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ROYAL ARMY VETERINARY CORPS

The following notification is made in *The London Gazette* (November 14th, 1941): Hugh Adair Clay (211900) to be Lt., October 23rd, 1941.

PERSONAL

Will.—Col. Edgar David Johnson, of Hurst, Berks, formerly of 45, St. James's Street, Nottingham, late veterinary officer to the South Notts Hussars, who died on May 21st, left estate of the gross value of £12,792, net personalty £8,666.

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SPARE PARTS FOR CARS

Motor vehicle spare parts which are in short supply will in future be issued only if a certificate of need is submitted, states the Ministry of War Transport. If the manufacturer or his agent cannot meet the order or promise delivery within 21 days, the certificate will be returned and the operator can, if the vehicle is engaged on important national work, apply for help through the Ministry, whose officers may pass on to the Ministry of Supply a spares' shortage certificate.

The object of the new arrangement is to regulate delivery of parts in short supply. It applies to all civilian operated vehicles and to Government vehicles where parts are ordered through civilian repairers. Certificates of need will not be required for wheels or tyres.

Supplies of certificates of need are available at the various Regional Transport Commissioners' offices of the Ministry of War Transport.

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FOOT-AND-MOUTH DISEASE IN EIRE

During a discussion, in the Dail, on the recent outbreaks of foot-and-mouth disease, the Veterinary Inspectorate were stoutly defended by Dr. Ryan, the Minister of Agriculture, against sundry criticisms of the control methods employed. "We ought to have a little more respect for our technical men here," said Dr. Ryan, who added that there was not a single case of infection in Eire from any area where the disease had been notified. A senior official from England who visited the country stated that he thought that the situation could not have been tackled in a better manner. The great majority of the farmers did everything possible to help, but some of them sent their milk to the creamery and then notified the Department that they thought they had the disease. Compensation, he thought, had been adequate. He intended to amend the Diseases of Animals Act in order to cut out the right of appeal, as he thought appeal was useless when the animals were buried.

In his opening statement Dr. Ryan had stated that the 1941 epidemic had cost the Government £451,021. There were 556 outbreaks in 13 counties, necessitating the slaughter of 27,895 cattle, 9,797 sheep, 608 goats, and 3,201 swine. In Kilkenny alone 7,900 cattle were slaughtered. Cost of staff was about £130,000, and of disinfection and other equipment £3,200.

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NATURE PRESERVATION IN POST-WAR RECONSTRUCTION

A preliminary memorandum on "Nature Preservation in Post-War Reconstruction" has been issued by a conference which, under the chairmanship of Lord Onslow, has been considering the matter since June.

This conference came into being as a result of the announcement that Lord Reith had appointed a committee on the use of land in post-war planning. The organisations taking part are the following:—

Association of Municipal Corporations, British Association, British Ecological Society, British Museum (Natural History), British Ornithologists' Union, British Trust for Ornithology, County Councils Association, Geological Society, Linnean Society, Royal Entomological Society, Royal Society for the Protection of Birds, Society for the Preservation of the Fauna of the Empire, Society for the Promotion of Nature Reserves, Urban District Councils Association, and Zoological Society.

The memorandum states that there are three distinct needs—the preservation of (*a*) rural amenities; (*b*) forest

areas as a part of the nation's resources; and (c) the natural fauna and flora for the advancement of scientific knowledge and education. In the view of the conference there are four ways in which these needs can be met:—

1. National parks, providing facilities for the recreation of the public with no more restriction than is essential to preserve their amenities.

2. Forest and wild life reserves, to which the public would be admitted, subject to necessary restrictions.

3. Areas in which further development would be prohibited or drastically restricted. Here the existing movement of the public would not be interfered with, but additional facilities would not be provided.

4. Nature reserves or sanctuaries, from which the public would be excluded, except by permit for study.

National Planning

In some insatnces all these needs could be met in the same area. Areas of the first three types must be large. Those of the fourth type could be much smaller, usually measurable in hundreds or tens of acres, or even less. The conference makes the recommendation that "The provision of such areas should be among the matters comprised in National Planning."

The latter part of the memorandum gives more detailed consideration of each type of area, and in regard to the first urges that the recommendations of the "Report of the National Park Committee," issued by the Stationery Office in 1931, should be put into effect.

Nature reserves should be selected upon an ecological basis, and should be of different types, such as fen, moorland, mountain, cliff, beach, woodland, and so forth, so that the typical animals and plants of each kind of country would be preserved. Some of these reserves could form part of the larger schemes for national parks and areas protected from development.

An official body should be appointed to draw up detailed proposals upon this highly technical problem of nature reserves, the control of which should be in the hands of a central body. The management of the national parks might, it is suggested, be in the hands of local bodies, acting under two national park authorities (one for England and Wales and the other for Scotland) responsible for general policy.

The conference remains in being. Its Honorary Secretary is Dr. G. F. Herbert Smith, Society for the Promotion of Nature Reserves, British Museum (Natural History), S.W.7.

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Commenting on the above, *The Times*, from which the report is taken, observes: "The memorandum stakes out the claim of nature preservation, and more particularly of the preservation of wild animals and plants, to a place in the programme of national reorganisation of this country after the war. The conference which has produced this document is remarkable because it consists of delegates not only of the principal bodies connected with natural history, but also (and apparently for the first time in such a connection) of organisations representing the local government authorities. This is a hopeful sign in the discussion of projects that seem at first sight to involve an acute conflict of interests—for example, of agriculture, popular recreation, sport, and scientific study."

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INSPECTION OF HORSE MEAT

As a sign of the times, which require that the British public should modify its uncompromisingly antagonistic attitude to the continental acceptance of horse meat as a valuable supplement to the flesh of other animals, interest attaches to the following note which appeared in *The Stratford Express* of November 14th, in connection with a visit to slaughterhouse used for the preparation of horse carcases for human consumption.

"Eleven carcases of horse meat had been dressed and it was the unanimous opinion that it was very good food. A small pony had also been killed and dressed, and its carcase was said to resemble that of first quality veal. There was also a thin horse coloured with a green dye in accordance with the requirements of the Ministry of Food, and denoting that it was not intended for human consumption.

"Mr. H. E. Bywater, M.R.C.V.S., F.R.SAN.I., Chief Veterinary Officer and Meat Inspector for West Ham, said that after many years' experience in the examination of cattle and other animals normally used for food, he could unhesitatingly say that disease was rare in the horse slaughtered for human food although unfortunately it was frequent in other animals."

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H.M. STATIONERY OFFICE PUBLICATIONS

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at Hotel Lindum, St. Anne's, Lytham St. Anne's, Lancs.

	Price net. s. d.	*Post free* s. d.
Statutory Rules and Orders, 1941:		
E.P.1786/S.51. Livestock (Control) (Scotland) Order, June 26th ...	0 1	0 2
E.P.1809. Use of Milk (Restriction) Order, 1941. General Licence, November 12th	0 1	0 2

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Dr. S. F. Dorey in his presidential address to the British Association of Refrigeration suggested that the Council of the Association should renew its efforts in the direction of education. Steps should be taken to ensure that an adequate supply of technically trained recruits should be forthcoming, and papers set for the competitive examination should include some questions on refrigeration. He added that youthful members of the engineering profession would do well before turning towards the refrigeration industry to direct their attention to the science which treated of life.—*Meat Trades Journal.*

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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CONTROL OF ANIMAL DISEASE: THE SCHEME OF THE SURVEY COMMITTEE OF THE N.V.M.A.

To the Editor of the Veterinary Record

Sir,—There has been much criticism of the scheme which has arisen from the report of the Survey Committee of the N.V.M.A., some of it almost vituperative, most of it destructive, but very little which has been helpful or constructive. No one can doubt that the report itself is the finest piece of epizootiological study which has been done in our time. Although I am one of the great body of general practitioners who believe that the scheme is unworkable in its present form, I feel that I must offer my thanks and wholehearted admiration to those who compiled the report.

The publicity in both the professional and lay Press which the report has received has opened a nation-wide discussion from which some definite conclusions must be drawn as to the type of service in which we as a profession can be best used to benefit the stockowner, the individual veterinary surgeon, the national war effort and, most important, the animals themselves, and in what form that service would be most acceptable to them.

If the N.V.M.A. do not solve the problem themselves, then I fear that others outside the profession, who are only awaiting the opportunity, will do so, most probably with disastrous results.

Neither the stockowner nor his veterinary surgeon is bankrupt, but neither are they so opulent that they can embark on wide schemes for disease control without State aid and supervision. Both want to pull their weight in the national war effort and both require a lead as to how it should be done. Both want to make this island a nucleus for the breeding stock which will be required by the already devastated areas of Europe. The peasants of these areas will neither desire nor be able to pay for fancy pedigree stock, but will want healthy and productive commercial cattle, which can be provided if we pool our resources and work together. The progeny of such cattle could become a living monument to British agriculture and veterinary science.

I cannot help but think that, in a country where a man is compulsorily made to plough healthy soil to produce healthy plants, it is only a matter of time before the production of healthy animals on the same soil will become compulsory also. It is not outside the bounds of possibility that, within the next few years, wholesale vaccinations of cattle against tuberculosis and the several forms of brucellosis will be demanded as a public health measure by the meat eating and milk drinking populace. For such eventualities we must prepare.

As the proposed N.V.M.A. Scheme seems to be so decidedly unpopular I suggest two practical alternatives for consideration.

One is the system which prevails in some parts of Europe, in which a veterinary surgeon is appointed to a district by the State at a fixed salary, followed by a small pension in his old age. He is encouraged to practice in his spare time after having given first place to his State duties of disease control. He cannot leave his district unless the State decides that it would be better served by the change. Should he require assistance, his assistant is appointed by the State and a small allowance made toward his pay. The assistant, especially if his chief be young, is often there for life with little chance of ever being promoted or moved elsewhere.

The other system is panel practice worked on lines similar to the National Health Insurance. Of the two systems I prefer the latter, as everyone would be free to live and work where and how he will, while individual initiative would remain unhampered.

As I envisage it, a panel system, both national and compulsory, would be set up under the direction of the Ministry of Agriculture and Fisheries.

The two existing panels would remain with modifications. Only whole-time officers and those on Panel A would deal with scheduled contagious diseases as at present, while those on Panel B would deal with everything else. Any registered veterinary surgeon, irrespective of age or sex, who cared to apply would be put on Panel B and not removed until he or she proved incapable of performing the allotted duties. Any suitable veterinary surgeon could be on both panels at the discretion of the Ministry.

From the beginning all bovine diseases would be embraced, including parasitism and minor surgery, such as teat operations and puncture of the rumen, as well as all conditions which are the direct result of enemy action. Excluded from the scheme would be accidental injuries, parturition and its attendant conditions, foot conditions requiring surgical interference, castrations, ringing of bulls and major operations.

A survey of all bovines in the country would be made as to disease and hygienic conditions, followed by drastic culling of all unprofitable stock whether diseased or not. The culling would be done by the War Agricultural Committee of the district in conjunction with a veterinary surgeon. As many farmers are still greatly overstocked the maximum number of cattle to be kept on each holding would be laid down by the committee and strictly adhered to.

Treatment of diseased stock and prophylactic measures as well as the elimination of the grossly diseased would be compulsory. Every animal sold for store or milk production, whether privately or by auction, would carry a certificate or declaration that it has passed or has failed to pass the tuberculin test and the agglutination test for Brucella within a month of sale, or, that it has been immunised against either or both diseases. The prevailing practice of purchasing store animals from Collecting Centres before grading would be prohibited.

Sera, vaccines, and diagnostic agents would be prepared by existing laboratories, but the standards of potency, etc., would be laid down and constantly checked by the Ministry's own laboratories.

A National Animal Formulary would be compiled, from which necessary prescriptions would be given, and the dispensing done by the chemist or the practitioner himself.

A laboratory service to aid and confirm diagnosis is necessary. The laboratories already set up at Ministry Divisional Headquarters together with existing County and research laboratories would not require much additional equipment or alteration for that purpose. There is already a considerable quantity of good laboratory equipment in the hands of Panel A practitioners, most of whom are perfectly capable of performing their own agglutination tests, etc., if they have the necessary number of samples to pay for the upkeep of the apparatus.

The stockowner would be free to choose his own veterinary surgeon for Panel B work, as on the present medical panel, and the veterinary surgeon would have the right of refusal to take the stock of any individual on his panel, while either would have to give three months' notice of a desire to change.

A maximum number of animals would be fixed for the panel of any one veterinary surgeon, and should his panel be in excess of that number he would be required to employ an assistant or take a partner.

A National Animal Health Fund would be set up by the Ministry into which the stockowner would pay an annual fee. In the beginning it would be subsidised by the Ministry. From the fund, veterinary fees, costs of medicaments and administration would be paid. When the income showed sufficient excess over expenditure the other farm animals would be absorbed into the scheme in the following order—swine, sheep, horses, poultry.

Under a system such as I have roughly outlined, the practitioners, the whole-time officers of the Ministry, and the research workers would all have a chance of working as a team to their mutual benefit, while unemployment in the profession would soon disappear.

I do not know a single medical panel practitioner who would under any circumstances revert to the pre-panel era of bad debts and treatment at his own expense of the semi-starving poor, nor can I find any evidence of the deterioration of the general health of the public as a result of the system. But, I do know personally and well many working people who have benefited enormously from treatment, given under that system, which they could never otherwise have afforded.

I offer this for constructive criticism and suggest that some such scheme with its necessary adjustments and elaborations be tried out for the period of the war

and for one year afterwards, when, if we have failed in our endeavours to win the war on disease, we can return to our present position all the better for the experience.

Yours faithfully,
A. A. Forsyth.

"Elmcroft,"
Church Street,
Cannock,
Staffs.
November 20th, 1941.

. . . . .

To the Editor of the Veterinary Record

Sir,—I have read with much interest the scheme of the Survey Committee of the N.V.M.A. for the control of certain diseases of dairy cattle, and also various letters which have appeared lately in connection with it. Many members are entirely in favour of the scheme, while an equal number are of opinion that its adoption can only spell disaster for the profession. I do not propose to enter into the controversy for or against, but, at the same time, I cannot help feeling that one or two fundamental points have been lost sight of, both by members of the Committee and those taking part in discussions on the scheme.

Whatever the diversity of opinions may be, I think we are all agreed that the losses in dairy herds caused by the diseases specified are appalling, especially in and around the more industrial centres. If that be the position then there must be some fundamental factors at work to produce it, and, if I am any judge, it is not sufficient simply to say that this state of affairs has been brought about by *Streptococcus agalactiae, Brucella abortus,* etc. To my mind, that is only half the truth, as it does not answer the question as to why these organisms find our dairy herds such a fertile field for their activities. As one who has watched these activities for a number of years, I have formed the firm conviction that modern methods of dairy farming are more responsible for the present position than the organisms themselves. By this I mean that the vicious practices of over-feeding, over-production, over-crowding, trafficking in dairy cows, etc., falsely adopted by the dairymen to meet his increased liabilities—in many cases self-imposed—have created the present position, and I am convinced that the existence of the diseases specified will always bear a distinct relationship to the prevalence of these practices. Nature abhors a vacuum, but, at the same time, she also abhors a crowd. She is our greatest ally, and while she may be benevolently tolerant of man's puny activities up to a point, she is also jealous of too much interference, and, as far as animals are concerned, her method of asserting herself is by means of creating disease, and so thinning the ranks. Thus, in any scheme which we may evolve, we would do well to consider her maxims. Even if the present scheme justified the fondest hopes of its promoters in, say, a few years, and, at the same time, the present pernicious practices were allowed to remain, we should be faced with the ignominious position of ousting a few diseases at the front door, while nature was cunningly ushering in at the back some others of which we had never dreamed.

I make bold to say that the present necessity for culling, reduction in feeding, and consequent reduction in stock, is a blessing in disguise, and will do more to reduce the incidence of disease in dairy herds in one year than the present N.V.M.A. scheme could do in five years—or perhaps more. I have no doubt that the general practitioner can corroborate this statement as a result of his own experience in much the same way as his medical confrère finds food rationing beneficial to the health of mankind.

It is our duty to practise prevention rather than cure, and to teach the principles of sound animal husbandry, thus laying a sure foundation for any venture—if any venture be necessary thereafter: for our success or failure will in no small measure depend on whether we respect the tenets of mother nature or ignore her.

Yours faithfully,
John Weir.

Dhu Crag,
Stonehouse Road,
Strathaven.
November 21st, 1941.

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To the Editor of the Veterinary Record

Sir,—It is with some trepidation that I venture to answer your several distinguished correspondents who have stated their opposition to the above scheme, since they must have good reasons for the opinions they hold. I would, however, like to draw the attention of these gentlemen to a leading article in *The Times* of yesterday, entitled "Milk Supplies,"* in which the writer asks the question, "Can steps be taken to increase the output of fresh milk in the winters of 1941-42 and 1942-43?" This surely is the crux of the matter. By tackling the problems of infertility and mastitis as energetically as we can, we shall probably be able to help materially to increase at any rate next winter's milk supply, though not this.

That further research and knowledge of these conditions is desirable no one can deny, but the time to make a start of tackling these problems is now. I feel that as a profession we have little cause for self-congratulation on what we have so far achieved in this war. We are reserved chiefly for the purpose of controlling disease in and maintaining the health of farm livestock. The position at present, however, is that several important diseases of dairy cattle remain largely untouched, while numerous veterinary practitioners are still spending a considerable proportion of their time in treating cats and dogs. In my view this state of things is preposterous in a war in which we are fighting for our very food.

The main criticism of the scheme is that it is not comprehensive enough; *e.g.,* some of the worst infected herds may remain untouched simply because the owners are not in the scheme.

Sir Arthur Olver is to be congratulated on his excellent letter in *The Veterinary Record* of November 8th, demanding more suitable Government provision for the care of livestock and development on a national scale of the livestock industries in this country. There is a job of work for the veterinary profession in this country. The sooner we are able to get on with that work, with energy and enthusiasm, the better.

Yours faithfully,
F. A. Byrne.

Solihull,
Warwickshire.
November 18th, 1941.

* Reproduced in our last issue, page 688.—*Editor.*

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To the Editor of the Veterinary Record

Sir,—I gather that it is the general consensus of opinion of the critics of this scheme that the profession should adopt some scheme as their contribution to the national war effort, but that they are not prepared to stake their own or their profession's reputation upon this present scheme which is so palpably impractical.

I had hoped by my last letter to stimulate some alternative proposals. Because none have been forthcoming I will venture to offer my own.

In my opinion at least four conditions must be fulfilled before we can claim to be able to control any disease:—

(*a*) Knowledge of aetiology and pathogenesis.
(*b*) Effective methods of diagnosis and control.

(*c*) A profession which is capable of applying these methods.

(*d*) A farming community which understands the importance of controlling the disease.

I consider that only contagious abortion of cattle falls under all four headings, and I am firmly convinced that, given the opportunity, this present generation of veterinary practitioners could eradicate this disease as efficiently as our illustrious forefathers eradicated cattle plague, glanders and the rest.

As to details, I suggest that this campaign be essentially the province of the practitioner with the moral support and technical assistance of the Ministry of Agriculture, its officials and laboratories.

Two methods of control might be used: vaccination and blood testing, the latter being permissible only in Accredited and T.T. herds.

It is quite clear that only owners whose herds were suffering from the disease would join the scheme, but it should be made compulsory for all such owners to join. To this end the present indiscriminate issue of anti-abortion vaccines and so-called treatments to the public should cease. All abortion vaccines should be tested or made by the Ministry of Agriculture and issued only to the practitioners. It might be necessary to make this a notifiable disease but with the absolute minimum of rules and regulations: simply that its existence be notified to the Ministry of Agriculture and the farmer's practitioner and that the latter should proceed at once to carry out the procedure agreed upon.

The duties of the practitioner under this scheme and any contract drawn up to implement it should be SOLELY:—

(*a*) Diagnosis.

(*b*) Decision as to the method of control to be adopted.

(*c*) Carrying out the method decided upon.

(*d*) Final declaration that the herd was free from clinical evidence of the disease.

A scale of fees for this work could easily be agreed upon and could be made such that the cost to the farmer would be less than it would otherwise be under present conditions. The practitioner would not suffer, because any loss in individual fees would be offset by the greater number of outbreaks with which he would have to deal.

I am aware that there is nothing revolutionary in this proposal. It is nothing more than the concerting of those activities which the ordinary practitioner is already performing from day to day. Nevertheless I feel that it has everything to recommend it. It is practicable. It is simple. It offers a very reasonable chance of success. I feel that it would lead eventually to the total eradication of this disease which is indubitably one of the major sources of loss to the dairy farmer and the stock raiser and so to the nation as a whole, besides being a source of justifiable criticism against the profession as a whole.

Yours faithfully,
J. P. Pickering.

Long Close,
Hexham,
Northumberland.
November 23rd, 1941.

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SWINE FEVER

To the Editor of the Veterinary Record

Sir,—I see with pleasure that the Ministry are working on swine fever and that Weybridge are experimenting with a dead vaccine.

One of the great faults in regard to measures for the control of swine fever is the long time which must elapse before we are justified in confirming some of the cases, during which period infection may have spread to other pigs or premises.

The best diagnostic agent for swine fever is paratyphoid vaccine. Let us suppose that one is called in to see some ailing pigs; there are no dead ones amongst them, nor do you feel justified in slaughtering any—and if you did, it would be a waste of time because there would be no lesions. Give such pigs a dose of paratyphoid vaccine and wait for a few days to see the result. If there is no improvement in the condition of the animals you can regard them as cases of swine fever although you may have to wait a week or two before you obtain lesions. In some cases, but they are very few, one may have to give a second dose of the vaccine and so have to wait a few more days, but even then it should not take more than one week, whereas in many cases a few weeks would pass before the case would be diagnosed in the ordinary manner. I can thoroughly recommend this diagnostic procedure to anyone who is interested in swine fever.

Yours faithfully,
G. C. Lancaster.

Eastwick House,
Evesham,
Worcs.
November 14th, 1941.

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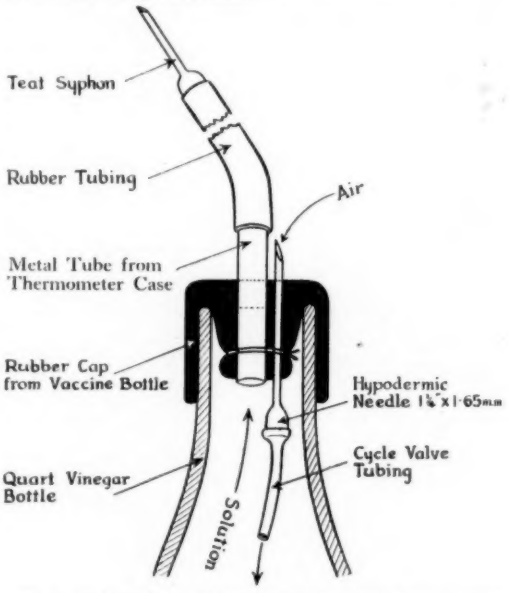
APPARATUS FOR UDDER AND INTRAVENOUS INFUSION

To the Editor of the Veterinary Record

Sir,—In view of the difficulty of obtaining apparatus for udder and intravenous infusion I thought the accompanying sketch of an easily made gadget might be of interest to practitioners.



The cycle valve tubing must be sufficiently long (approx. 1½ in.) to prevent the carrying down of air bubbles by the flow of solution.

Yours faithfully,
K. Stuart.

Orchard Way,
Hazelgrove Road,
Haywards Heath.
November 8th, 1941.